Wireless Networks Falcon Packet Radio
Installation & Operating Instructions
Rev 2.5   December 14, 2000

1.0 Introduction

This document summarizes the installation and operating instructions for the Wireless Networks Falcon Packet Radio.

**This device complies with Part 15 of the FCC Rules, operation is subject to the following two conditions:**

1) **this device may not cause harmful interference, and**
2) **this device must accept any interference received, including interference that may cause undesired operation.**

FCC ID: 08J-FPR-U20
Models: Falcon FPR-U20-110, Falcon FPR-U20-120

2.0 Overview

The block diagram shown below illustrates the major blocks of the system:
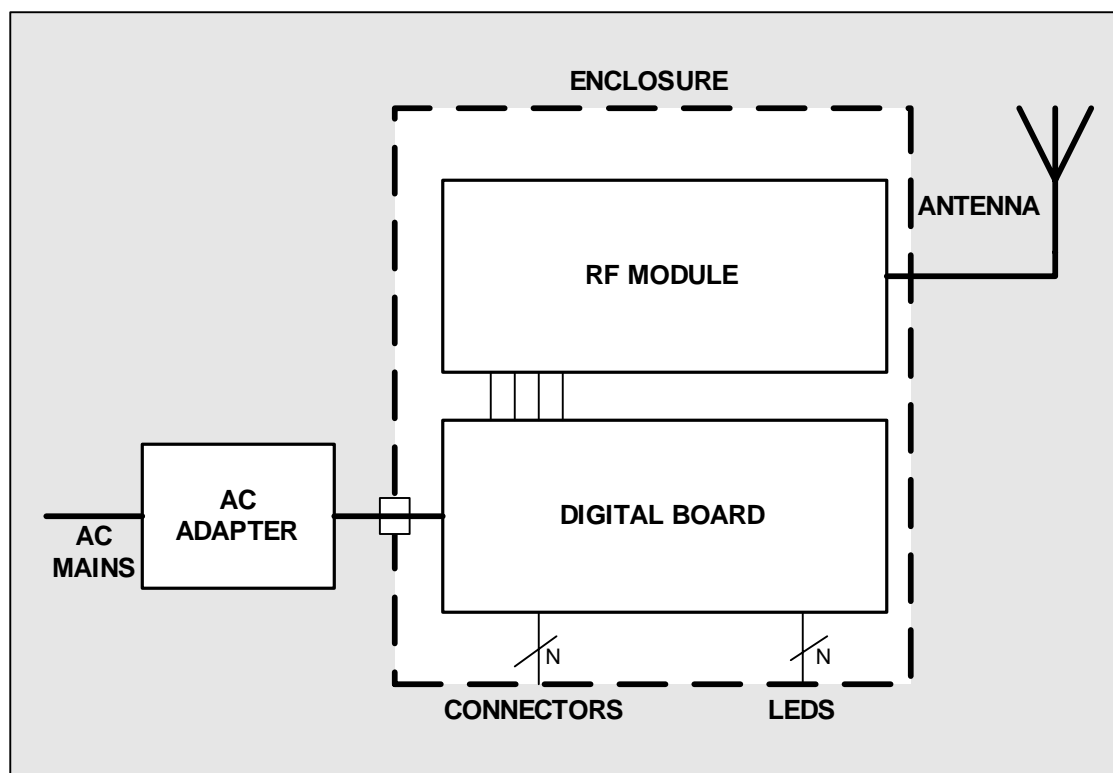
3.0 System Description

The Wireless Networks Falcon Packet Radio is used in a wireless local area network, operating in the 450 - 470 MHz frequency band.   The installed radio consists of a stand-alone countertop radio, cables to access Ethernet and data lines, AC wall transformer, antenna, and coax cable to the antenna. The unit is powered by an AC wall transformer, which converts AC mains (90 – 240 VAC) to DC voltage to power the radio. Data transmission capability is 19.2 kbps. Radio is operated in half-duplex mode, and data is transmitted in packets. Front panel contains connectors to AC transformer, Ethernet, data lines; front panel also contains indicator lights (LEDs).   Rear panel contains connector to antenna. This radio is licensed by the FCC under parts 2 and 90, and meets FCC part 15.

There are two main physical/functional blocks, an RF module and a digital board. The RF module is an off the shelf half duplex UHF RF link, capable of 2W of output power. The digital board is a printed circuit board that provides the remainder of the hardware functionality (CPU, peripherals, internal power supplies, etc.). Both the digital board and RF module reside in a metallic enclosure, to provide electromagnetic compatibility.   With the exception of the antenna connector, the digitial board provides all other connections to the outside of the enclosure.

The Falcon Packet Radio operates in the 450 – 470 MHz frequency band and is used within a local area wireless network. Synthesized RF Channels are selectable in the field, and can be changed by instructions generated within the network. RF power output is fixed. The network consists of individual user sites and a hub which gathers all transmitted information, monitors activity, and generates instructions.   Both of these functions utilize the same hardware.

4.0 Specifications

4.1 General

Frequency Band	450 – 470 MHz
Regulations	Licensed under FCC parts 2 & 90
	Complies with FCC part 15
Capacity	19.2kbps (9600 baud)
Modulation	4-level FSK
Channel Bandwidth	12.5 kHz
Operation Mode	Half Duplex

4.2 Interfaces

Type	4 serial ports, RS-232/RS-485
Physical	RJ11
Type	Ethernet, 10BASE-T compatible
Physical	RJ45
Type	Coax connection
Physical	BNC-female
Type	Power plug
Physical	2.5 mm jack

4.3 RF Transmitter and Receiver

Frequency Band	450 – 470 MHz
Output Power (max)	2 watts
Frequency Control	Synthesized, $\pm$ 1.5 ppm stability

4.4 Antenna

Frequency Range	430 – 470 MHz
Input	BNC-male
Gain	3.2 dBi
Length	17 inches

4.5 Power Requirements

Input AC Voltage	90 to 264 VAC, 47 – 63 Hz

Input Current	0.5 A @ 115VAC
	0.3 A @ 230VAC
Output DC Voltage	12 VCD
Output Current	1500 mA
Output Ripple/Noise	100 mV p-p max.
Output Connector	2.5 mm plug

4.6 Environmental Specifications

Ambient Temperature	0 to 70 degrees C
Storage Temperature	-40 to +85 degrees C
Relative Humidity	5% to 95% non-condensing

4.7 Mechanical

Enclosure Size	5.38 x 5.28 x 1.12 inches
Enclosure Weight	1.0 lbs

5.0 Interfaces

Function (enclosure text)	Connector Type
AC ADAPTER INPUT (DC)	2.5 mm jack
ETHERNET (ETHERNET)	RJ45
TERMINAL 1 (A)	RJ11
TERMINAL 2 (B)	RJ11
TERMINAL 3 (C)	RJ11
TERMINAL 4 (D)	RJ11
ANTENNA	BNC - female

6.0 Display Indicators

Function (enclosure text)	Description	Type
POWER (PWR)	Indicates that power from an external AC adapter is connected.	Green LED
ONLINE (ONLINE)	Indicates that the CPU is active, and that it has a link with the Access Point.	Green LED
RF PACKET RECEIVE (RX)	System is currently receiving a packet.	Green LED
RF PACKET TRANSMIT (TX)	System is currently transmitting a packet.	Green LED
ETHERNET LINK (LINK)	Ethernet link has been established.	Green LED
ETHERNET ACT (ACT)	Flashes with Ethernet activity.	Green LED

7.0 Installation

IMPORTANT!! In order to comply with the FCC RF exposure requirements, the 17" (3.2 dBi) antenna and the 22-ft cable provided with this unit must be used. Do not use a different antenna or cable. Doing so may result in the installed system exceeding the RF exposure requirements. Further, the antenna must be installed such that a minimum distance of 20 cm away from all nearby persons is maintained.

Installation of the Falcon Packet Radio should be near an AC outlet with enough distance to use provided AC wall transformer.   When utilizing the Ethernet capability, the unit should be close enough to Ethernet data port for easy cabling.   Installation is not permanent – this is a countertop unit that is easy to relocate. No tools are required for installation.

Connect AC wall transformer to DC input of radio making sure that jack seats fully in mating connector; connect other end to AC wall outlet. Connect BNC cable connector from antenna to BNC connector on rear panel, making sure that connector locks into place. When connecting serial ports (RJ11) or Ethernet port (RJ45) be sure that connector clicks into place.

Upon power-up, unit will perform self-tests.

This unit to be installed only by properly trained professionals, in accordance with FCC rules and regulations.

8.0 Warranty

Wireless Networks Falcon Packet Radio product is not sold to the general public. This product is used as a wireless access device in the wireless networks deployed and operated by Wireless Networks, Inc. or its subsidiaries. Consequently the product carries no limited warranty. The product is manufactured and tested to meet all FCC and safety requirements. All repairs and maintenance are carried out by Wireless Networks, Inc. trained and certified depot sites to ensure compliance with all FCC and safety requirements.